

262/374

PATENT



JDK-US020374

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Hiromune MATSUOKA et al.

Serial No.: 10/521,753

Filed: January 19, 2005

For: REFRIGERATION DEVICE

Attn.: Application Processing Division
Customer Correction Branch

**REQUEST FOR CORRECTION OF
OFFICIAL FILING RECEIPT**

Assistant Commissioner of Patents
Washington, DC 20231

Sir:

Applicants have noticed a U.S. Patent and Trademark Office error in the Title on the Official Filing Receipt. Specifically, the Title was incorrectly typed as

" REFRIGERATION EQUIPMENT"
while it should be

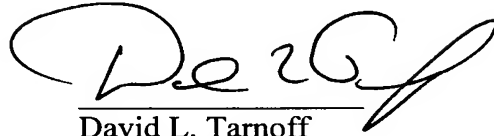
-- REFRIGERATION DEVICE--.

A Preliminary Amendment was filed with the application correcting the Title.

Attached is a copy of the Official Filing Receipt received from the PTO in the above application, with the correction noted thereon. Issuance of a corrected Filing Receipt is respectfully requested.

The correction is not due to Applicant error, therefore, no fee is due.

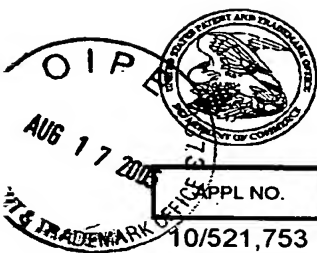
Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. L. Tarnoff', written over a horizontal line.

David L. Tarnoff
Reg. No. 32,383

SHINJYU GLOBAL IP COUNSELORS, LLP
1233 Twentieth Street, NW, Suite 700
Washington, DC 20036
(202)-293-0444
Dated: 8-16-05

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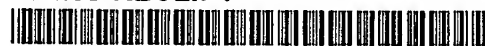
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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/521,753	01/19/2005	3744	900	DK-US020374	5	20	1

CONFIRMATION NO. 9216

FILING RECEIPT



OC000000016632361

22919
SHINJYU GLOBAL IP COUNSELORS, LLP
1233 20TH STREET, NW, SUITE 700
WASHINGTON, DC 20036-2680

Date Mailed: 07/28/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Hiromune Matsuoka, Sakai-shi, JAPAN;
Kazuhide Mizutani, Sakai-shi, JAPAN;

COPY

Assignment For Published Patent Application

Daikin Industries, Ltd., Osaka, JAPAN

Power of Attorney: The patent practitioners associated with Customer Number 22919.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/JP03/09286 07/22/2003

Foreign Applications

JAPAN 2002-225822 08/02/2002

Projected Publication Date: 11/03/2005

Non-Publication Request: No

Early Publication Request: No

Title

RECEIVED

AUG 03 2005

Global IP Counselors, LLP



REFRIGERATION DEVICE

Refrigeration equipment

Preliminary Class

062

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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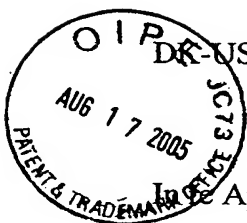
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PATENT



DK-US020374

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Application of

Hiromune Matsuoka et al.

Serial No.: New – (National Phase of
PCT/JP2003/009286)

Filed: Herewith

For: REFRIGERATION DEVICE (As Amended)

COPY

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, DC 20231

Sir:

Prior to examination of the above-identified application, please amend the subject application as follows.

Amendments to the Title begin on page 2 of this paper.

Amendments to the Specification begin on page 3 of this paper.

Amendments to the Abstract begin on page 10 of this paper.

Amendments to the Claims are reflected in the Listing of Claims, which begins on page 11 of this paper. Claims 1-20 are pending, with claims 1 being the only independent claims.

Amendments to the Drawings begin on page 15 of this paper and include five (5) attached replacement sheets.

Remarks/Arguments begin on page 16 of this paper.

Serial No.: New – PCT/JP2003/009286 Nat'l Phase
Filed: Herewith

AMENDMENTS TO THE TITLE:

Please replace the title at page 1, line 2 with the following rewritten version:

Refrigeration ~~Equipment~~ Device

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning at page 1, line 4 with the following rewritten version:

The present invention relates to a refrigeration ~~equipment~~ device, and more particularly to a refrigeration ~~equipment~~ device having a vapor compression type of refrigerant circuit.

Please replace the paragraph beginning at page 1, line 8 with the following rewritten version:

One example of a conventional refrigeration ~~equipment~~ device that includes a vapor compression refrigeration circuit is an air conditioner that is employed to provide air conditioning for buildings or the like. This type of air conditioner primarily includes a heat source unit, a plurality of user units, and a refrigerant gas junction line and a refrigerant liquid junction line that serve to connect these units together. The refrigerant gas junction line and the refrigerant liquid junction line of the air conditioner are positioned so as to connect the heat source unit and the plurality of user units, and thus the lines are long and have a complex line shape that includes many curves and branches along the length thereof. Because of this, when the air conditioner is to be renovated, there will be many occasions in which only the heat source unit and the user units are renovated, and the refrigerant gas junction line and the refrigerant liquid junction line of the preexisting device are left in place.

Please replace the paragraph heading at page 5, line 13 with the following rewritten version:

Summary ~~Disclosure~~ of the Invention

Please replace the paragraph beginning at page 5, line 18 with the following rewritten version:

According to a first aspect of the present invention, a ~~The~~ refrigeration device basically disclosed in claim 1 includes a main refrigerant circuit and ~~an auxiliary refrigerant circuit.~~ The main refrigerant circuit includes having a compressor, a heat source side heat exchanger, and a user side heat exchanger and a condenser connected. ~~The auxiliary refrigerant circuit is arranged between the compressor of the main refrigerant circuit and the user side heat exchanger.~~ The condenser is configured to condense, ~~and can return~~ a portion of the refrigerant that is compressed in the compressor and that is sent to the user side heat exchanger. ~~to the main refrigerant circuit after being condensed.~~

Please replace the paragraph beginning at page 5, line 25 with the following rewritten version:

With this refrigeration device, ~~the auxiliary refrigerant circuit~~ condenser allows the pressure of the refrigerant to be sent to the user side heat exchanger to be lowered by ~~returning~~ condensing a portion of the refrigerant that is compressed in the compressor and sent to the user side heat exchanger ~~to the main refrigerant circuit after being condensed.~~ This allows the pressure of the refrigerant sent to the user side heat exchanger to be stably controlled.

Please replace the paragraph beginning at page 6, line 6 with the following rewritten version:

According to a second aspect of the present invention, the ~~The~~ refrigeration device ~~disclosed in claim 2 is the refrigeration device of claim 1, in which~~ of the first aspect is provided such that a check mechanism is connected between the compressor and the user side heat exchanger of the refrigerant circuit, and allows only the flow of refrigerant from the user side heat exchanger to the compressor. The condenser is connected to the refrigerant circuit via a branching circuit that propagates the flow of refrigerant cut-off by the check mechanism

from the compressor to the user side heat exchanger, and a junction circuit that sends refrigerant condensed in the condenser to to the user side heat exchanger. ~~the auxiliary refrigerant circuit includes a branching circuit, a condenser, and a junction circuit. The branching circuit serves to branch a portion of refrigerant compressed in the compressor and sent to the user side heat exchanger from the main refrigerant circuit. The condenser can condense the branched refrigerant. The junction circuit can return the condensed refrigerant to the main refrigerant circuit.~~

Please replace the paragraph beginning at page 6, line 13 with the following rewritten version:

With this refrigeration device, the refrigerant pressure ~~can be reliably lowered because the refrigerant is condensed by the condenser.~~ can flow through the branching circuit, the condenser and the junction circuit when the refrigerant is to be sent from the compressor to the user side heat exchanger, and refrigerant can flow through the check mechanism of the main refrigerant circuit when the refrigerant is to be sent from the user side heat exchanger to the compressor.

Please replace the paragraph beginning at page 6, line 15 with the following rewritten version:

According to a third aspect of the present invention, the ~~The refrigeration device of the first or second aspects of the present invention is further provided with a pressure detection mechanism to detect the pressure of the refrigerant that flows between the condenser and the user side heat exchanger.~~ disclosed in claim 3 is the refrigeration device of claim 2, in which the auxiliary refrigerant circuit further includes an open/close mechanism that can propagate/cut off the flow of refrigerant to the condenser.

Please replace the paragraph beginning at page 6, line 18 with the following rewritten version:

With this refrigeration device, because a pressure detection mechanism that detects the refrigerant pressure between the condenser and the user side heat exchanger is provided, the pressure of refrigerant sent to the user side heat exchanger can be stably controlled by changing the heating load in the condenser in accordance with pressure variation. ~~the flow of refrigerant to the condenser can be propagated/cut-off and the refrigerant condensed because an open/close mechanism is provided. This allows the pressure of the refrigerant sent to the user side heat exchanger to be stably controlled.~~

Please replace the paragraph beginning at page 6, line 22 with the following rewritten version:

According to a fourth aspect of the present invention, the ~~The refrigeration device of~~ anyone of the first to third aspects of the present invention is further provided with a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchanger. ~~disclosed in claim 4 is the refrigeration device of claims 2 or 3, in which a pressure detection mechanism is provided on the main refrigerant circuit or the auxiliary refrigerant circuit, and serves to detect the refrigerant pressure between the condenser and the user side heat exchanger.~~

Please replace the paragraph beginning at page 7, line 1 with the following rewritten version:

With this refrigeration device, refrigerant can flow through the condenser and the bypass circuit when the refrigerant is to be sent from the compressor to the user side heat exchanger, and refrigerant can flow through the check mechanism of the main refrigerant circuit when the refrigerant is to be sent from the user side heat exchanger to the compressor. ~~because a pressure detection mechanism that detects the refrigerant pressure between the condenser and the user side heat exchanger is provided, the pressure of refrigerant sent to the~~

~~user side heat exchanger can be stably controlled by changing the heating load in the condenser in accordance with pressure variation.~~

Please replace the paragraph beginning at page 7, line 6 with the following rewritten version:

According to a fifth aspect of the present invention, the ~~The refrigeration device of the fourth aspect of the present invention is further provided with an open/close mechanism configured to adjust the amount of the refrigerant that flows into the condenser.~~ ~~disclosed in claim 5 is the refrigeration device of any of claims 2 to 4, in which the auxiliary refrigerant circuit further includes a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchangers. The main refrigerant circuit further includes a check mechanism between a connector of the branching circuit of the main refrigerant circuit and a connector of the junction circuit of the main refrigerant circuit, which allows only the flow of refrigerant from the user side heat exchanger to the compressor.~~

Please replace the paragraph beginning at page 7, line 14 with the following rewritten version:

With this refrigeration device, because an open/close mechanism is provided, the flow of refrigerant to the condenser can be propagated/cut-off in a timely manner, and adjustment of the amount of the refrigerant that flows into the condenser can be performed while condensing the refrigerant. This allows the pressure of the refrigerant sent to the user side heat exchanger to be stably controlled. ~~refrigerant can flow through the auxiliary refrigerant circuit when the refrigerant is to be sent from the compressor to the user side heat exchanger, and refrigerant can flow through the check mechanism of the main refrigerant circuit when the refrigerant is to be sent from the user side heat exchanger to the compressor.~~

Please replace the paragraph beginning at page 7, line 19 with the following rewritten version:

According to a sixth aspect of the present invention, the ~~The~~ refrigeration device ~~disclosed in claim 6 is the refrigeration device of any of claims 2 to 5, in which~~ of anyone of the first to fifth aspects of the present invention is provided such that the compressor is a heat exchanger that uses the refrigerant which flows inside the ~~main~~ refrigerant circuit as a cooling source.

Please replace the paragraph beginning at page 7, line 23 with the following rewritten version:

With this refrigeration device, refrigerant that flows inside the ~~main~~ refrigerant circuit is used as the cooling source, and thus another cooling source is unnecessary.

Please replace the paragraph beginning at page 8, line 1 with the following rewritten version:

According to a seventh aspect of the present invention, the ~~The~~ refrigeration device ~~disclosed in claim 7 is the refrigeration device of any of claims 1 to 6, in which~~ of anyone of the first to sixth aspects of the present invention is provided such the refrigerant ~~that flows in the main refrigerant circuit and the auxiliary refrigerant circuit~~ has saturation pressure characteristics that are higher than those of R407C.

Please replace the paragraph beginning at page 8, line 5 with the following rewritten version:

With this refrigeration device, refrigerant having saturation pressure characteristics higher than those of R407C can be used as the operating refrigerant, even in situations in which the maximum allowable pressure of the lines, equipment, and the like that form the circuits between the compressor and the user side heat exchanger can only be used up to the

saturation pressure of R407C at normal temperatures, because the refrigerant gas to be sent to the user side heat exchanger can be reduced in pressure by condensing a portion of the refrigerant gas sent from the compressor to the user side heat exchanger by means of the ~~auxiliary refrigerant circuit~~ condenser. Thus, for example, with a preexisting refrigeration device that uses R22 or R407C as the operating refrigerant, the refrigerant gas junction line between the condenser and the user side heat exchanger of the preexisting device can be reused even in situations in which a newly constructed refrigeration device uses a refrigerant having saturation pressure characteristics that are higher than those of R407C as the operating refrigerant.

Please replace the heading at page 9, line 6, with the following rewritten version:

Detailed Description of the Preferred Embodiments ~~Best Mode of Working the~~
~~Invention~~

Please replace the heading at page 34, line 1, with the following rewritten version:

WHAT IS CLAIMED IS: ~~CLAIMS~~

AMENDMENTS TO THE ABSTRACT:

Please replace the paragraph (Abstract) beginning at page 36, line 1 with the following rewritten version:

Abstract

~~The present invention stably controls the refrigerant pressure in a~~ A ~~refrigeration device is provided that has a compressor, a heat source side heat exchanger, and a user side heat exchanger. The refrigeration device also has a condenser arranged between the compressor and the user side heat exchanger. having a vapor compression type of refrigerant circuit, when refrigerant compressed in the compressor is sent to the user side heat exchangers. An air conditioner (1) a refrigerant liquid junction line (6) and a refrigeration gas junction line (7) of a preexisting device, a main refrigerant circuit (10), and a second auxiliary refrigerant circuit (42). The main refrigerant circuit (10) includes a compressor (21), a heat source side heat exchanger (24), and a user side heat exchanger (52). The second auxiliary refrigerant circuit 42 is arranged between a compressor 21 of the main refrigerant circuit 10 and the user side heat exchanger 52, and can~~ The condenser is arranged to ~~condense a portion of the refrigerant that is compressed in the compressor and that is sent to the user side heat exchanger. 52, and return the refrigerant to the main refrigerant circuit 10.~~

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A refrigeration device (1, 101, 201), comprising:
a main refrigerant circuit (10, 110, 210) having a compressor (21), a heat source side heat exchanger (24) arranged to supply refrigerant passing through the heat source side heat exchanger to the compressor, and a user side heat exchanger (52) arranged to receive the refrigerant that is compressed in the compressor; and
a condenser ~~an auxiliary refrigerant circuit (42, 242)~~ arranged between the compressor of the main refrigerant circuit and the user side heat exchanger, ~~and which can return the condenser being configured to condense~~ a portion of the refrigerant that is compressed in the compressor and ~~that is sent to the user side heat exchanger to the main refrigerant circuit after being condensed.~~

2. (Currently Amended) The refrigeration device (1, 101, 201) ~~disclosed in~~ according to claim 1, ~~wherein~~ further comprising
a check mechanism connected between the compressor and the user side heat exchanger to allow only the refrigerant to flow from the user side heat exchanger to the compressor, and
the condenser being connected to the ~~auxiliary~~ refrigerant circuit (42, 242) comprises via a branching circuit (42a) that ~~serves propagates the flow of the refrigerant cut-off by the check mechanism to branch a portion of refrigerant compressed in~~ from the compressor (21) and sent to the user side heat exchanger (52) ~~from the main refrigerant circuit (10, 110, 210), a condenser (42b) that can condense the branched refrigerant, and a junction circuit (42e) that can return~~ sends the condensed refrigerant condensed in the condenser to the main refrigerant circuit the user side heat exchanger.

3. (Currently Amended) The refrigeration device (1, 101, 201) disclosed in ~~claim 2~~ according to claim 1, wherein further comprising
a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchanger. ~~the auxiliary refrigerant circuit (42, 242) further comprises an open/close mechanism (42d) that can propagate/cut off the flow of refrigerant to the condenser (42b, 242b).~~

4. (Currently Amended) The refrigeration device (1, 101, 201) disclosed in ~~claims 2 or 3~~ according to claim 1, wherein further comprising
a pressure detection mechanism (42e) is provided on the main refrigerant circuit (10, 110, 210) or the auxiliary refrigerant circuit (42, 242), and serves to detect the pressure of the refrigerant pressure that flows between the condenser (42b, 242b) and the user side heat exchanger (52).

5. (Currently Amended) The refrigeration device (1, 101, 201) disclosed in ~~any of claims 2 to 4~~ according to claim 3, wherein further comprising
an open/close mechanism configured to adjust the amount of the refrigerant that flows into the condenser.

~~the auxiliary refrigerant circuit (42, 242) further comprises a bypass circuit (42f) that can bypass the condenser (42b, 242b) and propagate refrigerant from the compressor (21) to the user side heat exchanger (52); and~~

~~the main refrigerant circuit (10, 110, 210) further comprises a check mechanism (44) between a connector of the branching circuit (42a) of the main refrigerant circuit and a connector of the junction circuit (42c) of the main refrigerant circuit, and which allows only the flow of refrigerant from the user side heat exchanger to the compressor.~~

6. (Currently Amended) The refrigeration device (201) disclosed in ~~any of claims 2 to 5~~ according to claim 1, wherein

the condenser (242b) is a heat exchanger that uses the refrigerant that flows inside the main refrigerant circuit (210) as a cooling source.

7. (Currently Amended) The refrigeration device ~~(1, 101, 201) disclosed in any of claims 1 to 6~~ according to claim 1, wherein

the refrigerant that flows in the main refrigerant circuit (10, 110, 210) and the auxiliary refrigerant circuit (42, 242) has saturation pressure characteristics that are higher than those of R407C.

8. (New) The refrigeration device according to claim 2, further comprising a pressure detection mechanism is provided to detect the pressure of the refrigerant that flows between the condenser and the user side heat exchanger.

9. (New) The refrigeration device according to claim 2, further comprising a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchanger.

10. (New) The refrigeration device according to claim 9, further comprising an open/close mechanism configured to adjust the amount of the refrigerant that flows into the condenser.

11. (New) The refrigeration device according to claim 2, wherein the condenser is a heat exchanger that uses the refrigerant that flows inside the refrigerant circuit as a cooling source.

12. (New) The refrigeration device according to claim 2, wherein the refrigerant has saturation pressure characteristics that are higher than those of R407C.

13. (New) The refrigeration device according to claim 4, further comprising a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchanger.

14. (New) The refrigeration device according to claim 13, further comprising an open/close mechanism configured to adjust the amount of the refrigerant that flows into the condenser.

15. (New) The refrigeration device according to claim 4, wherein the condenser is a heat exchanger that uses the refrigerant that flows inside the refrigerant circuit as a cooling source.

16. (New) The refrigeration device according to claim 4, wherein the refrigerant has saturation pressure characteristics that are higher than those of R407C.

17. (New) The refrigeration device according to claim 8, further comprising a bypass circuit that can bypass the condenser and propagate refrigerant from the compressor to the user side heat exchanger.

18. (New) The refrigeration device according to claim 17, further comprising an open/close mechanism configured to adjust the amount of the refrigerant that flows into the condenser.

19. (New) The refrigeration device according to claim 18, wherein the condenser is a heat exchanger that uses the refrigerant that flows inside the refrigerant circuit as a cooling source.

20. (New) The refrigeration device according to claim 19, wherein the refrigerant has saturation pressure characteristics that are higher than those of R407C.

Serial No.: New – PCT/JP2003/009286 Nat'l Phase
Filed: Herewith

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figures 1 to 5, i.e., the direction of the "Fig." legends have been changed. These replacement sheets, which include Figures 1 to 5, and replace the original sheets that included Figures 1 to 5.

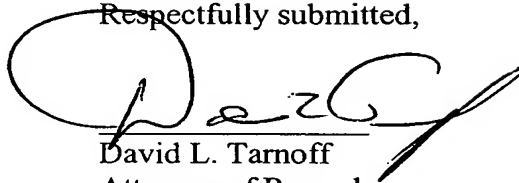
Attachment: five (5) replacement sheets

Serial No.: New – PCT/JP2003/009286 Nat'l Phase
Filed: Herewith

REMARKS

Entrance of this Amendment is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. Tarnoff', is written over a horizontal line.

David L. Tarnoff
Attorney of Record
Reg. No. 32,383

SHINJYU GLOBAL IP COUNSELORS, LLP
1233 Twentieth Street, NW, Suite 700
Washington, D.C. 20036
(202)-293-0444
Dated: 01-19-05

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